

Derived Weather State Information via ADS-B, Phase I

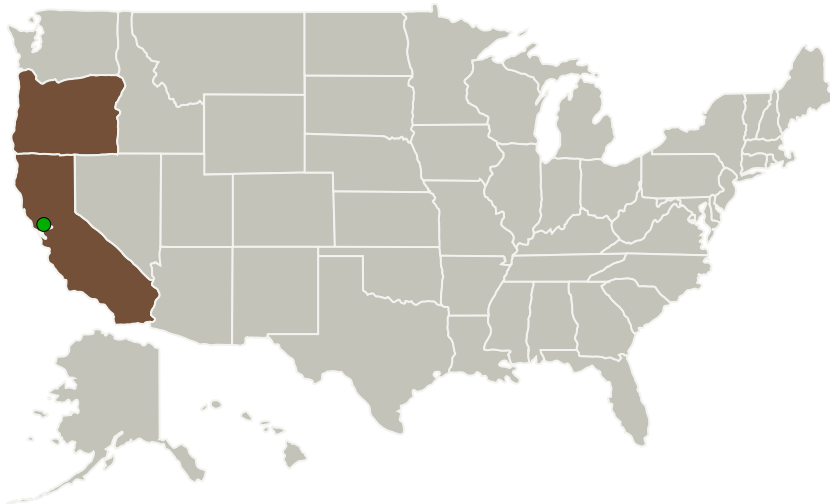
Completed Technology Project (2012 - 2012)



Project Introduction

The Innovation Laboratory, Inc., proposes to use Automatic Dependent Surveillance – Broadcast (ADS-B) information as the basis of atmospheric wave and turbulence identification. Working in conjunction with the National Center for Atmospheric Research (NCAR), we research the feasibility of using the high rate ADS-B altitude information to detect the presence of mountain waves and Mountain Wave Turbulence (MWT) in the vicinity of steep terrain as well as atmospheric waves and turbulence from other sources that are of interest to aviation. The key element of ADS-B that enables the research is a 1 second update rate on ADS-B position reports, and aircraft position (and altitude) being reported based on Global Positioning System (GPS) accuracy. This frequency, as will be shown later, is much faster than today's standard of reporting meteorological data via the Aircraft Meteorological Data Relay (AMDAR) or Meteorological Data Collection and Reporting System (MDCRS), and this should be fast enough to estimate the location of mountain wave events and MWT. Although this is the most immediate application of the high-rate ADS-B data, ultimately this system may provide aircraft sensors in the sky for a wide variety of atmospheric state data without any additional sensors being built or mounted on aircraft in the National Airspace System (NAS). Because ADS-B is mandated by 2020, the percentage of aircraft using ADS-B will grow each year, and this in turn will benefit all who use our innovation.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
The Innovation Laboratory, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Portland, Oregon
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California	Oregon
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Project Transitions

▶ **February 2012:** Project Start

✓ **August 2012:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138078>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

The Innovation Laboratory, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

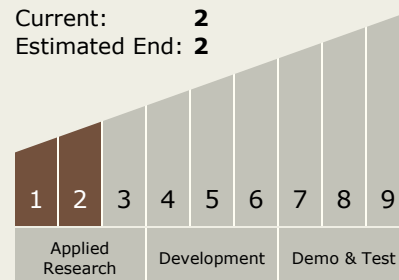
Carlos Torrez

Principal Investigator:

Jimmy Krozel

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



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Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - └ TX16.4 Architectures and Infrastructure

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System